

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



REC'D 19 JAN 2005

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Applicant's or agent's file reference 214601/PCT mue/ba	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/09995	International filing date (day/month/year) 09.09.2003	Priority date (day/month/year) 09.09.2002
International Patent Classification (IPC) or both national classification and IPC B32B27/28		
Applicant GERRO PLAST GMBH		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 6 sheets, including this cover sheet.
 - ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
 - These annexes consist of a total of 5 sheets.

- This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 27.02.2004	Date of completion of this report 20.01.2005
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Girard, S Telephone No. +31 70 340-4187 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 03/09995**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*):

Description, Pages

2-9 as originally filed
1 received on 18.10.2004 with letter of 18.10.2004

Claims, Numbers

1-18 filed with telefax on 07.01.2005

Drawings, Sheets

1/1 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
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International application No. **PCT/EP 03/09995**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	2-5,7-9,11,13-17
	No: Claims	1,6,10,12,18
Inventive step (IS)	Yes: Claims	-
	No: Claims	1-18
Industrial applicability (IA)	Yes: Claims	1-18
	No: Claims	-

2. Citations and explanations

see separate sheet

1. Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

(D1): JP-A-9114380 (based on Derwent Abstract)

(D2): JP-A-11338356 (based on Derwent Abstract)

(D3): WO-A-02066247

1.1. Art.33(2) PCT

1.1.1: (D1) discloses a multilayered structure comprising an inner layer consisting of a high impact polystyrene containing 10w% or less of butadiene, on each side of which is formed an outermost layer consisting of styrene-butadiene copolymer, as well as its use as a heat retractable label for containers made from synthetic or metallic material. The thickness of the inner layer represents 40 to 80% of the total thickness of the structure (**Abstract**).

The respective amounts of styrene and butadiene in the copolymer of the outermost layers are not explicitly disclosed in D1; however, the term "general purpose styrenic resin" used in the claims and the description is not specific as such and vague. Moreover, the description does not exclude rubber modification of styrene resins, it only mentions that "the term general purpose styrenic resin refers to styrenic resins with little or no rubber modification". Thus, a styrene-butadiene copolymer, although not the most favourite product, falls within the definition set in the description.

Additionally, values of thickness as such for the whole structure or for the individual layers are not disclosed. However, the mere fact that (D1) is silent concerning these features does not mean that the product disclosed in (D1), which is identical in all other aspects, does not fulfill this requirement. Moreover, the requirement as set in claim 1 is unclear since it covers a range "of 0.5 to at least 4 mils (0.012 to 0.102 mm at least)", and thus cannot be used as a distinguishing technical feature over the prior art. Furthermore, the definition of the amount of modifier present in the inner layer is defined only in very vague terms as a result to be achieved ("the third layer may function as a carrier layer for the first and second layers (...)"), and referring to the coextrusion process, which is only described earlier on in the same claim as a preferred, and not mandatory, method of making the label. This condition on the modifier of the inner layer is worded in such a confusing and unclear way that the

matter for which protection is sought in claim 1 is not defined. Thus, in addition to giving rise to a severe lack of clarity which contravenes Art.6 PCT, this wording prevents a fair comparison with the state of the art and is therefore discarded.

Therefore, the subject-matter of claims 1,6,10,12 and 18 appears not to be novel in view of (D1) (Art.33(2) PCT).

1.1.2: (D2) discloses a multilayered structure comprising an inner layer consisting of a high impact polystyrene dispersed with elastomeric material into a continuous phase of a styrene-ester methacrylate copolymer and modified with a terpene, on each side of which is formed an outermost layer consisting of styrene-butadiene copolymer, as well as its use as a heat shrinkable label for containers made from synthetic or metallic material (**Abstract**).

A reasoning similar to the one carried out in point 1.1.1 here above leads to the conclusion that the subject-matter of claims 1,6,10,12 and 18 appears not to be novel in view of (D2) (Art.33(2) PCT).

1.2. Art.33(3) PCT:

1.2.1: Claim 16

Document (D3) is considered as the closest state of the art to assess the inventive step of this claim. (D3) discloses a multilayered structure for the manufacture of labelling films, comprising an innermost layer made of polyolefin and two outermost layers made of a mixture of styrene-butadiene copolymers and polystyrene, as well as a process for the manufacture of such films. Especially, blow film extrusion facilities and fishtail die extrusion are explicitly disclosed (claims 1-3,6-9,13,15; page 5, line 12-page 6, line 23).

The mixture of the outermost layers consists of 10 to 80wt % of SBS copolymer and 90 to 20 wt% of polystyrene; the selection of a composition containing a major amount of polystyrene and a minor amount of SBS appears not to constitute an inventive option, since no effect is shown in the Application concerning said composition. Therefore, the composition of the outermost layers is encompassed by the definition of "general purpose styrenic resin" of the Application.

The subject-matter of claim 16 differs from (D3) in that, in the present application, the inner layer is made of a modified high or medium impact polystyrene. The effect of this

difference is not known. The problem remaining to be solved by the present claim 16 may thus be considered as providing a method of making for an alternative laminated label structure.

However, this multilayered label structure is known in the art, from (D1) or (D2) for example. The skilled person would thus naturally consider using the known technology in order to produce this alternative label structure, especially since the rheologies of polyolefin and polystyrene are very similar.

Thus, the subject-matter of claim 16 appears not to involve an inventive step (Art.33(3) PCT).

1.2.2: The additional features of dependent claims 2-5,7-9,11,13-15 and 17 are mere embodiments within the ambit of the main claims 1,10,12 and 16. It has not been shown that these technical features substantiate to a solution of a technical problem in a non-obvious matter. Thus, the subject-matter of these dependent claims appears to lack an inventive step in the sense of Art.33(3) PCT.

2. Further comments

2.1: As already mentioned in point 1.1 here above, the attention of the Applicant is drawn to the fact that the undefined range for thickness, the condition on the amount of modifier which relates to a result to be achieved and refers to the coextrusion process, which is in fact a mere preferred embodiment only, do violate the requirements set in Art.6 PCT (see as well Rule 6.3(a) PCT). The same reasoning applies to the subject-matter of claims 10,12 and 16.

2.2: The use of a trade name in claims (here in claims 10,12 and 16) is to be avoided as it may not be guaranteed that the product referred to is not modified while maintaining its name during the term of the patent.

2.3: The attention of the Applicant is drawn to the fact that the description comprises a very large number of printing mistakes, ununderstandable sentences, as well as missing units, which render its examination extremely burdensome and contravene the requirement of Art.5 PCT.

New introductory part of description

The invention is concerned with a multi-layer film structure, especially label-structure for labelling of bottles, glass bottles as well as plastic bottles, cans, jars
5 and other containers. Such structures are already known in a high number of various combinations. A reference is made for example to EP-B1-84360, EP-B1-450331, GB-PS-1383622, GB-PS-1284766, US-PS-4 207 402, US-PS-4 904 324, DE-OS-43 15 006, EP-A1-612 613, US-PS-3,275,720 and Belgium patent 706 673.

10 The film structure, especially printed with for example trade names, user directions or other information, may be used for applications such as wrapping of articles, printed sheets, for example for lying under dishes on the table. The multi-layer film label-structure will be used for labelling of bottles, jars and so on.

15 JP-A-9114380 discloses a multi-layer label structure with outer layers consisting of styrene butadiene-block copolymer or styrene-butadiene-acrylic acid-based block copolymer. The inner layer consists of polystyrene. JP-A-11338356 discloses a label consisting of a middle layer and two surface layers on either
20 side of said intermediate layer. Both surface layers consist of styrene butadiene-block copolymer. WO 02/066247 A1 refers also to a multi-layer structure having an inner layer of polyolefins and / or olefin-copolymers and outer layers of styrol-butadiene-styrol block copolymers and polystyrol-homopolymers.

25 (To continue in line 21, page 1 WO 2004/024445 starting with "All the known label-structures ...")

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C L A I M S

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1. Preferably co-extruded multi-layer structure, especially multi-layer film structure, with a first and a
5 second outer layer and a third inner layer between the first and second layer, all layers consisting essentially of polystyrene, whereby the overall thickness is in the range of 0,5 to at least 4 mils (0,012 to 0,102 mm or more) and the first and second layer do consist of
10 general purpose styrenic resin whereas the third layer does consist of a modified tough polystyrene with modifiers such as butadiene and/or acrylat and/or similar modifiers, and with such an amount of those modifiers, that the third layer may function as a carrier layer for
15 the first and second layer, in terms of allowing to produce the label-structure according to the coextrusion process.

2. Film structure according to claim 1, characterized by
20 a shrinkability in extrusion direction.

3. Structure according to one ~~or more~~ of the preceding claims ~~or especially to one of them~~, characterized in that the third layer is pigmented.
25

4. Structure according to one ~~or more~~ of the preceding claims ~~or especially to one of them~~, characterized in that the third layer is voided.

5. Structure according to one ~~or more~~ of the preceding claims ~~or especially to one of them~~, characterized in that the third layer is foamed.
30

6. Structure according to one ~~or more~~ of the preceding claims ~~or especially to one of them~~, characterized in
35

that the first and second layers do provide ca. 25 to ca. 75 % of the overall weight/thickness.

7. Structure according to one ~~or more~~ of the preceding claims ~~or especially to one of them~~, characterized in that the first and second layer do provide ca. 50 to ca. 75 % of the overall weight/thickness and that the third layer is transparent.

8. Structure according to one ~~or more~~ of the preceding claims ~~or especially to one of them~~, characterized in that the first and the second layer do provide ca. 25 to ca. 50 % of the overall weight/thickness and that the third layer is opaque.

9. Structure according to one ~~or more~~ of the preceding claims ~~or especially to one of them~~, characterized in that the shrinkability is almost only present in extrusion direction.

10. Multi-layer film structure, especially multi-layer film label structure, having a shrinkability in extrusion direction, produced in the coextrusion process, with a first and a second outer layer and a third inner layer between the first and second layer, all layers consisting essentially of polystyrene, characterized in that the first and second layer are by weight approximately 50-75% of the overall weight of the label-structure, that the overall thickness is in the range of 0,5 to at least 4 mils (0,012 to 0,102 mm) and that the first and second layer consist of general purpose styrenic resin, whereas the third layer is a modified tough polystyrene, such as "K-resin" of Philipps Petroleum Chemicals.

11. Multi-layer film structure according to claim 10, characterized in that the shrinkability is present only in extrusion direction.

5 12. Multi-layer film structure, especially multi-layer film label-structure, produced preferably in the coextrusion process, with a first and second outer layer and a third inner layer between the first and second layer, all layers consisting essentially of general purpose
10 styrenic resin, characterized in that the first and second layer are by weight approximately 25-50% of the overall weight of the structure, that the overall thickness of the structure is in the range of 0,5 to at least 4 mils (0,012 to 0,102 mm or more), that the first
15 and second layer do consist of general purpose styrenic resin, whereas the third layer is a modified tough polystyrene such as "K-resin" of Philipps Petroleum Chemicals, and that the third layer is foamed, voided or pigmented in order to give the structure opaque properties.
20

13. Multi-layer film structure according to claim 11, characterized by a shrinkability in extrusion direction.

25 14. Multi-layer film structure according to claim 12 or 13, characterized in that a further inner layer (fourth layer) is provided and that the fourth layer does consist of recycled material.

30 15. Multi-layer film structure according to one of the claims 12 to 14, characterized in that the shrinkability is almost only in extrusion direction.

35 16. Method for producing a polystyrene based multi-layer structure, with a middle layer (third layer) of tough

polystyrene, having additives such as butadiene and/or acrylat or consisting of so called "K-resin", characterized in that in a first step one or two outer layers are put on the middle layer preferably by coextrusion, such outer layers consisting of general purpose styrenic resin, and that the so built structure will be in a second step blown up preferably in a bubble blowing process whereby the middle layer functions as a carrier in term of toughness for the outer layers.

17. Method according to claim 16, characterized by a shrinkability only in extrusion direction.

18. Container, such as glass container, plastic container, metal container, labeled with a multi-layer label-structure having one or more of the features mentioned for the structure in one or more of the preceding claims or produced according to the claimed method.

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